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Research Article

A PHARMACEUTICAL STUDY OF AN AYURVEDIC FORMULATION - *BALYADI LEPA*

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ABSTRACT

Balyadi lepa is a herbo-mineral formulation mentioned in the classical text called *Yogaratnakara*. It contains *Shuddha Gandhaka, Shuddha Bhallataka, Shuddha Chitraka, Danti, Nimba, Vidanga,* and *Amlavetasa*. *Balyadi lepa* is useful in the management of *Switra*. *Balyadi lepa* should be mixed with lukewarm water and applied on the affected area. *Shodhana* of *Gandhaka* is explained in *Rasa Ratna Samucchaya*, *Shodana* of *Bhallataka* and *Chitraka* is explained in *Rasa Tarangin*, preparation of *Churna is* explained in the *Sharangadhara samhitha.* In the present study, *Churna* of all drugs were taken in a *Khalwa yantra* and mixed well to prepare homogenous mixture of *Balyadi lepa.* Step by step pharmaceutical procedures were carried out according to classical reference and SOP. Loss during the process, total yield is noted. Pharmacological action of the *Balyadi lepa* is discussed in brief.

INTRODUCTION

Balyadi lepa is used for the treatment of *Switra* i.e., Vitiligo. Ingredients of this formulation are *Shuddha Gandhaka, Shuddha Bhallataka, Shuddha Chitraka, Danti, Nimba, Vidanga,* and *Amlavetasa.*

In the present study, *Balyadi lepa* was prepared following the classical reference, pharmaceutical guidelines and SOP. *Shodhana* of *Gandhaka, Bhallatak* and *Chitraka* was done*. Churna* of *Shuddha Gandhaka, Shuddha Bhallataka, Shuddha Chitraka, Danti, Nimba, Vidanga,* and *Amlavetasa* were prepared following standard operating procedure and the process involved from the purchase of drug to packing was documented in a step-by-step procedure.

MATERIALS AND METHODS

Literature Review

All the data was collected from classical texts and pharmaceutical procedures involved in the preparation of *Balyadi lepa* were carried out in PG Department of *Rasa Shastra* and *Bhaishajya Kapana,* S.V Ayurvedic College, T.T.D, Tirupati.

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Total pharmaceutical study was carried out in 5 stages

Stage 1: *Shodhana* of *Gandhaka, Bhallataka,* C*hitraka*

Stage 2: Preparation of *Gandhaka churna, Bhallataka churna, Chitrakamoola churna, Dantimoola churna, Nimba churna, Vidanga churna, Amlavetasa churna.*

Stage 3: Preparation of homogenous mixture

Stage 4: Preparation of *Kanji*

Stage 5: Preparation of *Balyadi lepa*

1. *Gandhaka Shodana* and *Churna nirmana*

Reference: *Rasa Ratna Samucchaya* 3 / 20-22

Materials: *Ashuddha Gandhaka*– 500g, *Godugdha*– 4 litres, *Go ghrita* – 20g, water – As required

Method/ principle: *Dhalana*

Apparatus: Wide mouthed glass jar, stainless steel vessels, spatula (spoon), cotton cloth, gas stove, *Khalwa Yantra.*

Procedure

- Milk was taken in a glass vessel. A cloth was tied to its mouth.
- *Ashuddha Gandhaka* was taken in a *Khalwa Yantra* and made into fine powder.
- *Go Ghrita* was taken in a *Lohadarvi* and was heated on *Mandagni*.
- Fine powder of *Gandhaka* was added to *Lohadarvi* and heated till it gets completely melted.

- Melted *Gandhaka* was poured into milk through the cloth.
- *Gandhaka* was taken out from milk and washed with hot water.
- Above process is repeated for 6 times.
- Fresh milk was taken each time.
- After completion of process *Shuddha Gandhaka* was taken out, dried and pounded in *Khalwa yantra*.
- Pounded material was collected and stored in a glass container.

Observation

- On pouring molten *Gandhaka* through cloth, impurities like small stones, mud, etc were filtered over the cloth.
- Melted *Gandhaka* looked like ghee.
- After *Shodhana, Gandhaka* colour was changed from dull yellow to thick, bright yellow colour with increased lustre**.**
- *Dugdha* was hot after *Dhalana*

Precaution

- *Mandagni* was maintained throughout the process.
- During melting**,** *Gandhaka* was constantly stirred.
- Care was taken while pouring *Gandhaka* to avoid spilling.

RESULTS

Table 1: Result of *Gandhaka Shodhana* and *churna nirmana*

Initial weight	Final weight	Loss in weight	Loss percentage
500g	480g	20g	4%

Probable reason for loss in weight

- Impurities were removed.
- *Gandhaka* was stuck to the cloth.

2. *Bhallataka Shodana* and *Churna nirmana*

Reference: *Rasa Tarangini* 24/476-477, *Sharangadhara Samhita Madhyama Khanda* 6/12.

Materials: *Bhallathaka* seeds 500gm, brick powder– sufficient quantity.

Narikela Jala - Sufficient quantity

Method/principle: *Gharshana, Swedana*

Apparatus: Fine brick powder, cloth, *Dolayantra, Khalwa yantra,* weighing machine, stainless steel vessel.

Procedure

- The *Bhallataka* seed (*Semicarpus anacardium*) caps were carefully cut with sharp instrument.
- Tied in a thick cloth like a sack along with required quantity of fine brick powder.
- The sack was then rubbed thoroughly from outside until the brick powder is soaked with the oil from *Bhallataka* seeds.
- Later the seeds were washed with warm water and dried.
- *Bhallataka* seeds were taken in double folded cloth and made into *Pottali.*
- The *Pottali* was hung in *Dolayantra* containing freshly collected tender coconut water as *Dravadravya*.
- The process of *Swedana* was carried out over mild fire for 3 hours.
- Later the seeds were taken out, washed with warm water and dried.
- *Shuddha Bhallataka* was taken in *Khalwa yantra* and pounded well to make powder.
- Pounded material was collected and stored in a steel container.

Observation

- Oil oozes from seeds into brick powder.
- Colour of sand changes in to black colour when mixed with seed oil.
- Oil oozes from seeds into *Narikela jala* through cloth.
- Colour of *Narikela jala* turned in to black colour when mixed with seed oil.

Precaution

Avoid contact with seed oil

Apply coconut oil all over body.

Table 2: Result of *Bhallataka Shodhana* and *Churna nirmana*

Initial weight	Final weight	Loss in weight	Loss in percentage
500g	350g	150g	30%

Probable Reason for Loss in Weight

- Removal of seed cap
- Removal of impurities
- Loss of seed oil

3. *Chitrakamoola Shodana* and *Churna nirmana*

Reference: *Rasa Tarangini*-24/574, *Sharangadhara Samhita Madhyama Khanda* 6/12

Materials: *Chitrakamoola* -150g, *Churnodaka*- Q.S.

Method/Principle: *Nimajjana*

Apparatus: Beaker

Procedure

- *Chitrakamoola* was cleansed to remove external impurities if any.
- *Chitrakamoola* was cut into smaller pieces.

- It was soaked in *churnodaka* for 24 hours.
- Later *Chitrakamoola* was taken out, washed with lukewarm water and dried in sunlight.

Observation

- Clear liquid consistency and white colored lime water turned to turbid consistency and dark red color after purification process.
- pH of lime water changed from 11 to 6 after *Chitrakamoola shodhana*.

Precaution

- It should be left undisturbed for 24 hours.
- *Chitrakamoola* was washed properly.
- *Chitrakamoola* was dried properly.

Table 3: Result of *Chitrakamoola Shodhana* and *Churna nirmana*

Initial Weight	Final weight	loss in weight	Loss in percentage
150g	140g	10g	6.25%

Reason for weight loss

Loss was incurred due to removal of impurities.

4. *Dantimoola Churna nirmana*

Reference: *Sharangadhara Samhita Madhyama Khanda* 6/12

Materials: *Dantimoola* - 250g

Method/Principle: Pounding

Apparatus: *Khalwa yantra,* stainless steel vessel, weighing machine, cloth

Procedure

- *Dantimoola* was well dried was collected.
- It was taken in *Khalwa yantra* and pounded well to make a fine powder.
- Pounded material was collected in a stainless-steel vessel through a clean cloth.

Observation

Fine Powder of *Dantimoola churna* is obtained

Precaution

- While pounding there should not be any spillage.
- Sieving should be done cautiously to get fine powder of drug.

Table 4: Result of preparation of *Dantimoola Churna*

Initial weight	Final weight	Loss in weight	Loss percentage
250 g	150g	100 g	40%

Probable reason for weight loss

- Loss was incurred due to spillage during pounding.
- Loss was due to fibre content of drug.

5. *Nimba Churna nirmana*

Reference: *Sharangadhara Samhita MadhyamaKhanda* 6/12

Materials*:* *Nimba* - 250g

Method/Principle: Pounding

Apparatus: *Khalwa yantra,* stainless steel vessel, weighing machine, cloth

Procedure

- *Nimba* bark was well dried was collected. It was taken in *Khalwa yantra* and pounded well to make a fine powder.
- Pounded material was collected in a stainless-steel vessel through a clean cloth.

Observation

Fine powder of *Nimba churna* is obtained.

Precaution

- While pounding there should not be any spillage.
- Sieving should be done cautiously to get fine powder of drug.

Table 5: Result of preparation of *Nimba Churna*

Initial weight	Final weight	Loss in weight	Loss percentage
250 g	200g	50 g	20%

Probable reason for weight loss

Loss was incurred due to spillage during pounding.

6. *Vidanga Churna nirmana*

Reference: *Sharangadhara Samhita, Madhyama Khanda* 6/12

Materials: *Vidanga* - 250g

Method/Principle: Pounding

Apparatus: *Khalwa yantra,* stainless steel vessel, weighing machine, cloth

Procedure

- *Vidanga* was well dried was collected.
- It was taken in *Khalwa yantra* and pounded well to make a fine powder.
- Pounded material was collected in a stainless-steel vessel through a clean cloth.

Observation

Fine Powder of *Vidanga churna* was obtained

Precaution

- While pounding there should not be any spillage.
- Sieving should be done cautiously to get fine powder of drug.

Table 6: Result of preparation of *Vidanga Churna*

Initial weight	Final weight	Loss in weight	Loss percentage
250 g	175g	75 g	30%

Probable reason for weight loss

Loss was incurred due to spillage during pounding.

7. *Amlavetasa Churna nirmana*

Reference: *Sharangadhara Samhita Madhyama Khanda* 6/12

Materials: *Amlavetasa*- 250g

Method/Principle: Pounding

Apparatus: *Khalwa yantra,* stainless steel vessel, weighing machine, cloth

Procedure

Amlavetasa was well dried was collected. It was taken in *Khalwa yantra* and pounded well to make a fine powder. Pounded material was collected in a stainless-steel vessel through a clean cloth.

Observation

Fine Powder of *Amlavetasa churna* is obtained.

Precaution

- While pounding there should not be any spillage.
- Sieving should be done cautiously to get fine powder of drug.

Table 7: Result of preparation of *Amlavetasa Churna*

Initial weight	Final weight	Loss in weight	Loss percentage
250 g	150g	100 g	40%

Probable reason for weight loss

- Loss was incurred due to spillage during pounding.
- Loss was due to fibre content of drug.

8. *Kanji nirmana*

Reference: *Bhavaprakasha* 21/ 1-2

Materials: *Rakta shali* 500g, *Mulaka* 50g, *Haridra churna* -5g, water sufficient quantity

Principle: Fermentation

Apparatus: Earthen pot, cloth.

Procedure

- *Rakta Sali* was taken into clean vessel and 10 parts of water added to it.
- Then it was subjected to heat till *Rakta Sali* completely cooked.
- After completion, water was drained carefully and allowed to cool completely.
- New earthen pot was taken fumigated properly.
- Rice water was added to the pot. *Mulaka kalka* and *Haridra churna* was added.
- The pot was tied with cloth and kept undisturbed for 14 days.
- After 14th day pot was opened and the supernatant liquid portion was collected.

Observation

Strong fermented smell was observed.

Precaution

- The pot was fumigated well to prevent any bacterial and fungal contamination.
- Pot was kept undisturbed till 14 days.

9. Preparation of *Balyadi lepa*

Reference: *Yogaratnakara, Kushta chikitsa*, *Sloka* number: 58

Materials

1. *Shuddha Gandhaka churna*- 100g
2. *Shuddha Bhallataka churna*- 100g
3. *Shuddha Chitrakamoola churna*- 100g
4. *Dantimoola churna*- 100g
5. *Nimba churna*- 100g
6. *Vidanga churna*- 100g
7. *Amlavetasa churna*- 100g
8. *Kanjika*- Quantity sufficient

Principle: *Bhavana*

Apparatus: *Khalwa yantra*, spatula.

Procedure

- All the drugs were taken in equal quantity in a *Khalwa yantra* and triturated to form a homogenous mixture.
- *Kanjika* was added to this mixture and trituration was done till it attains smooth texture.
- The obtained paste was dried carefully and resultant dry powder was collected.

Observation

- After *Bhavana* the final product was smooth and dark brown in colour.
- The paste was unsticky when rolled between thumb and index finger.
- The obtained powder after drying of the paste was also in dark brown.

Precaution

- Care should be taken while triturating to prevent spillage.
- Required amount of *Kanjika* only to be added for *Bhavana*.

Table 8: Result of preparation of *Balyadi lepa*

Initial weight	Final weight	Loss in weight	Loss in percentage
700 g	700 g	-	0%

Pharmaceutical studies were carried out for the preparation of *Balyadi lepa* in five stages to obtain the contents in desired form.

Shodhana of Gandhaka

Ashuddha Gandhaka

Ghrita Bharjana of Gandhaka

After Dhalana of Gandhaka

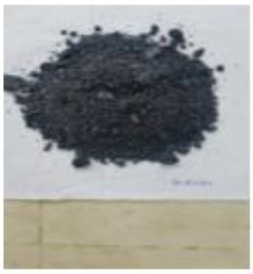
Shuddha Gandhaka churna

Shodhana of Bhallataka

Ashuddha Bhallataka

Dolayantra Swedana of Bhallataka

Shuddha Bhallataka



Shuddha Bhallataka churna

Shodhana of Chitrakamoola

Ashuddha Chitrakamoola

Nimajjana of Chitrakamoola

Shuddha Chitrakamoola

Shuddha Chitrakamoola churna

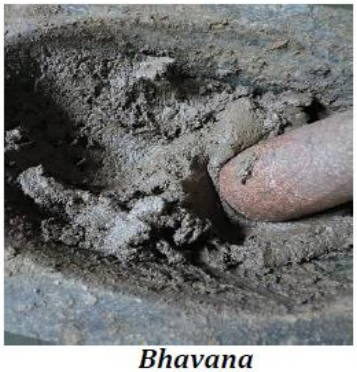
Dantimoola churna

Nimba churna

Vidanga churna

Amlavetasa churna

Kanjika


Bhavana

Balyadi lepa

Ingredients of this *Lepa* are *Shuddha Gandhaka, Shuddha Bhallataka, Shuddha Chitraka, Danti, Nimba, Vidanga,* and *Amlavetasa*.

The pharmaceutical procedures adopted in this study are *Shodhana*[2], *Churna nirmana*[3] and *Bhavana*[4].

उद्दिष्टै रौषधैः सार्द्ध क्रियते पेषणादिकम् ।
मलविच्छित्तये यत्तु शोधनं तदिहोच्यते' ।। (R. T. 2/42)

Shodhana increases the therapeutic efficacy of a drug. Removal of visible and invisible impurities. Macro forms of materials get converted into micro forms. Detoxification of toxic materials. In case of *Dhatu*, the hard materials are converted into soft and fragile material.

Modification of undesired properties. *Gandhaka, Bhallataka, Chitraka* will be more effective after *Shodana.*

अत्यन्त शुष्कं यत् द्रव्यं सुपिष्टं वस्त्र गालितं ।
तत् स्यात् चूर्णं रजः क्षोदः तन् मात्रा कर्ष संमिता । (Sha.Ma.6/1)

Churna nirmana plays key role in this formulation, because efficacy of the drug depends on fineness of the powder.

यच्चूर्णितस्य धात्वादेर्द्रवैः सम्पेष्य शोषणम् ।
भावनं तन्मतं विज्ञैर्भावना च निगद्यते' ।। (R.T 2/49)

Fine powders of *Gandhaka, Bhallataka, Chitraka, Danti, Nimba, Vidanga,* and *Amlavetasa* were taken in a clean *Khalwa yantra* and mixed well to form a homogenous mixture. Then it was mixed with *Kanji* and trituration should be done until it attains smooth texture. Then obtained paste was dried carefully and resultant dry powder was collected.

Balyadi lepa: Topical applications are very useful in *Switra.*

शरीरावयवौस्थेषु विसर्पपिदकादिषु ।
यथादोषं प्रदेहादि शमनम् स्याद्विशेषतः ।। (Ch.Ch.30/299)

According to Acharya Charaka external applications are useful in skin ailments.

In Ayurveda the topical applications are known as *Lepa* and this come under the broad heading of *Bahiparimarjana chikitsa*.

द्रव्यमार्धम् शिलापिष्टं शुष्कं वा सद्रवं तनु । देहे प्रलेपनार्थं तल्लेप इत्युच्यते बुधैः II (D.G.Ut)

Either ardra dravya (freshly collected drug) or *Shuska dravya* (dry drug in powder form along with water) are ground well and is made into a paste and are used for external applications are called *Lepas*.

Action of chief ingredients

- *Gandhaka*[5] has *Madura rasa, Usna, Snigdha, Sara guna, Ushna virya* and *Katu vipaka.* It has *Kusthaghna, Kandughna* properties.

  It has anti-microbial, anti-fungal properties
- *Bhallataka*[6] has *Katu, Tikta, Kashaya rasa, Laghu Tikshna, Snigdha guna, Usna virya* and *Madura vipaka.* It is *Kapha-vata shamaka* in nature, and has *Kushtaghna, Vranahara, Krimihara* properties.

  It has anti-bacterial, anti-allergic, anti-inflammatory properties.
- *Chitraka*[7] has *Katu rasa, Laghu, Ruksha, Tikshana guna, Ushna virya* and *Katu vipaka.* It alleviates *Vata* and *Kapha,* and has *Kushtahara, Kanduhara* and *Shotahara* properties.

  It has anti-bacterial, anti-inflammatory, anti-cancerous properties.
- *Danti*[8] has *Katu rasa, Guru, Tikshna guna, Ushna virya* and *Katu vipaka.* It is *Kustaghna, Krimighna, Kandughna* in nature.

  It has anti-inflammatory and anti-fungal properties.
- *Nimba*[9] has *Tikta, Kasaya rasa, Laghu, Ruksha guna, Sita virya* and *Katu vipaka.* It is *Jwarahara, Kustaghna, Krimighna* in nature.

  It has anti-fungal, anti-inflammatory and anti-bacterial properties.
- *Vidanga*[10] has *Katu, Kasaya rasa, Laghu, Ruksha, Tikshana guna, Ushna virya* and *Katu vipaka.* It is *Vatahara, Kustaghna, Krimighna* in nature.

  It has anti-inflammatory, anti-bacterial and anti-microbial properties.
- *Amlavetasa*[11] has *Amla rasa, Laghu, Ruksha guna, ushna virya* and *Amla vipaka.* It is *Hridyam, Deepana, Pachana.*

  It has anti-inflammatory and anti-microbial properties.

CONCLUSION

Pharmaceutical standardization is an important requisite for the establishment of an efficient drug. *Lepa* is meant for external applications. The pharmaceutical procedures involved in this study are *Shodhana*, *Churna nirmana* and *Bhavana. Churna nirmana* procedure helps in size reduction thereby making the drug more bioavailable. The ingredients of *Balyadi lepa* are having *Kushtaghna, Kandughna, Krimighna* properties which are beneficial for the management of *Switra*.

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